

AMENDMENTS

In the Claims

1. (Currently Amended) A network device comprising:  
a tunnel classification stage, wherein  
said tunnel classification stage comprises  
a packet processing section,  
a security group identifier identification unit, coupled to said packet  
processing section, and  
a tunnel classification unit, coupled to said packet processing section  
and said security group identifier identification unit,  
said packet processing section is configured to classify a packet based on a  
security group identifier (SGI) of said packet, and  
said packet processing section is further configured to forward said packet  
through a tunnel via which said packet is to be forwarded, and  
said packet processing section is further configured use said SGI in  
determining said tunnel.
- 2.-3. (Cancelled)
4. (Currently Amended) The network device of claim ~~[[3]]~~ 1, wherein  
said packet processing section is further configured to forward said packet through said  
tunnel based on information in a header of said packet.

5. (Cancelled)

6. (Currently Amended) The network device of claim 1, wherein a single router comprises said tunnel classification stage.

7. (Currently Amended) The network device of claim 6, wherein said single router further comprises:  
a lookup unit.

8. (Currently Amended) The network device of claim 7, wherein said lookup unit comprises:

an access control list (ACL); and

a content-addressable memory, wherein

said content-addressable memory is coupled to access said access control list, and

said content-addressable memory is configured to

generate an index, and [[to]]

provide said index to said ACL.

9. (Currently Amended) The network device of claim 8, wherein  
said network device further comprises a memory,  
said ACL is stored in said memory,  
said content-addressable memory and said memory are coupled to one another,  
said ACL comprises~~[[:]]~~ a plurality of ACL entries (ACEs), ~~wherein~~ and  
each of said ACEs comprises a tunnel identifier field and a security group identifier field.

10. (Currently Amended) A method comprising:  
assigning a security group identifier (SGI) to a packet; ~~[[and]]~~  
classifying said packet based on said SGI;  
determining a routing of said packet, wherein said determining is based on said  
SGI; and  
forwarding said packet via a tunnel identified by said routing, if forwarding a  
packet having said SGI via said tunnel is permitted.

11. (Original) The method of claim 10, further comprising:  
determining whether said packet can be sent via a tunnel based on a result of said  
classifying said packet.
- 12.-13. (Cancelled)
14. (Original) The method of claim 11, wherein said determining comprises:  
generating an index, wherein said index comprises said SGI; and  
using said index to access an access control list (ACL), wherein said ACL includes  
information as to whether said packet can be sent via a tunnel.
15. (Original) The method of claim 14, wherein said information comprises:  
an SGI field; and  
a tunnel identifier field.
16. (Original) The method of claim 10, further comprising:  
forwarding said packet from an ingress router to an egress router via a tunnel.
17. (Original) The method of claim 16, further comprising:  
receiving said packet at said egress router; and  
determining whether said packet can be forwarded by said egress router based on said  
SGI.
18. (Original) The method of claim 17, wherein said determining whether said packet  
can be forwarded further comprises:  
determining whether said packet can be forwarded by said egress router based on said  
SGI, a destination of said packet and an identifier of said tunnel.
19. (Original) The method of claim 17, wherein said determining whether said packet  
can be forwarded further comprises:  
generating an index into an access control list (ACL), wherein

said ACL comprises information regarding whether said packet can be forwarded by said egress router, and  
said index includes said identifier of said tunnel; and  
accessing said ACL using said index.

20. **(Currently Amended)** A computer system comprising:  
a processor;  
computer readable storage medium coupled to said processor; and  
computer code, encoded in said computer readable storage medium, configured to cause said processor to:  
assign a security group identifier (SGI) to a packet; and  
**generate a classification of said packet by virtue of being configured to**  
classify said packet based on said SGI;  
**determine whether said packet can be sent via a tunnel based on said**  
**classification; and**  
**forward said packet via said tunnel, if forwarding a packet having said SGI**  
**via said tunnel is permitted.**

21. **(Cancelled)**

22. **(Currently Amended)** The computer system of claim **[[21]] 20**, wherein said computer code is further configured to cause said processor to:  
determine a routing of said packet, wherein said classification is also based on said routing.

23. **(Cancelled)**

24. **(Currently Amended)** The computer system of claim **[[21]] 20**, wherein said computer code configured to cause said processor to determine is further configured to cause said processor to:  
generate an index, wherein said index comprises said SGI; and

use said index to access an access control list (ACL), wherein said ACL includes information as to whether said packet can be sent via a tunnel.

25. (Original) The computer system of claim 24, wherein said information comprises:

an SGI field; and  
a tunnel identifier field.

26. (Original) The computer system of claim 20, wherein said computer code is further configured to cause said processor to:  
forward said packet from an ingress router to an egress router via a tunnel.

27. (Original) The computer system of claim 26, wherein said computer code is further configured to cause said processor to:  
receive said packet at said egress router; and  
determine whether said packet can be forwarded by said egress router based on said SGI.

28. (Original) The computer system of claim 27, wherein said computer code configured to cause said processor to determine whether said packet can be forwarded by said egress router is further configured to cause said processor to:  
determine whether said packet can be forwarded by said egress router based on said SGI,  
a destination of said packet and an identifier of said tunnel.

29. (Original) The computer system of claim 27, wherein said computer code configured to cause said processor to determine whether said packet can be forwarded by said egress router is further configured to cause said processor to:  
generate an index into an access control list (ACL), wherein  
said ACL comprises information regarding whether said packet can be forwarded  
by said egress router, and  
said index includes said identifier of said tunnel; and  
access said ACL using said index.

30. (Currently Amended) A computer program product comprising:  
a first set of instructions, executable on a computer system, configured to assign a security group identifier (SGI) to a packet;  
a second set of instructions, executable on said computer system, configured to classify said packet based on said SGI; ~~[[and]]~~  
a third set of instructions, executable on said computer system, configured to determine a routing of said packet, wherein said determining is based on said SGI;  
a fourth set of instructions, executable on said computer system, configured to forward said packet via said tunnel, if forwarding a packet having said SGI via said tunnel is permitted; and  
computer readable storage media, wherein said computer program product is encoded in said computer readable storage media.

31. (Currently Amended) The computer program product of claim 30, wherein said second set of instructions is further configured to generate a classification of said packet, and further comprising:  
a ~~third~~ fifth set of instructions, executable on said computer system, configured to determine whether said packet can be sent via a tunnel based on said classification.

32.-33. (Cancelled)

34. (Currently Amended) The computer program product of claim 31, wherein said ~~third~~ fifth set of instructions comprises:  
a first subset of instructions, executable on said computer system, configured to generate an index, wherein said index comprises said SGI; and  
a second subset of instructions, executable on said computer system, configured to use said index to access an access control list (ACL), wherein said ACL includes information as to whether said packet can be sent via a tunnel.

35. (Original) The computer program product of claim 34, wherein said information comprises:

an SGI field; and  
a tunnel identifier field.

36. (Currently Amended) The computer program product of claim 30, further comprising:

a ~~third~~ fifth set of instructions, executable on said computer system, configured to forward said packet from an ingress router to an egress router via a tunnel.

37. (Currently Amended) The computer program product of claim 36, further comprising:

a ~~third~~ sixth set of instructions, executable on said computer system, configured to receive said packet at said egress router; and

a ~~fourth~~ seventh set of instructions, executable on said computer system, configured to determine whether said packet can be forwarded by said egress router based on said SGI.

38. (Currently Amended) The computer program product of claim 37, wherein said ~~fourth~~ seventh set of instructions comprises:

a first subset of instructions, executable on said computer system, configured to determine whether said packet can be forwarded by said egress router based on said SGI, a destination of said packet and an identifier of said tunnel.

39. (Currently Amended) The computer program product of claim 37, wherein said ~~fourth~~ seventh set of instructions comprises:

a first subset of instructions, executable on said computer system, configured to generate an index into an access control list (ACL), wherein said ACL comprises information regarding whether said packet can be forwarded by said egress router, and said index includes said identifier of said tunnel; and

a second subset of instructions, executable on said computer system, configured to access said ACL using said index.

40. (Currently Amended) An apparatus comprising:  
means for assigning a security group identifier (SGI) to a packet; ~~[[and]]~~  
means for classifying said packet based on said SGI;  
means for determining a routing of said packet, wherein said means for determining is configured to use said SGI in determining said routing; and  
means for forwarding said packet via a tunnel identified by said routing, if forwarding a packet having said SGI via said tunnel is permitted.

41. (Original) The apparatus of claim 40, further comprising:  
means for determining whether said packet can be sent via a tunnel on based a result generated by said means for classifying said packet.

42. (Cancelled)

43. (Currently Amended) The apparatus of claim ~~[[42]]~~ 41, further comprising:  
means for forwarding said packet via said tunnel, ~~operable~~ wherein said means for forwarding is configured to forward said packet via said tunnel if forwarding a packet having said SGI via said tunnel is permitted.

44. (Original) The apparatus of claim 41, wherein said determining comprises:  
means for generating an index, wherein said index comprises said SGI; and  
means for using said index to access an access control list (ACL), wherein said ACL includes information as to whether said packet can be sent via a tunnel.

45. (Original) The apparatus of claim 44, wherein said information comprises:  
an SGI field; and  
a tunnel identifier field.



46. (Currently Amended) The apparatus of claim 40, ~~further comprising: wherein~~ said means for forwarding said packet is configured to forward said packet from an ingress router to an egress router via ~~[[a]]~~ said tunnel.
47. (Original) The apparatus of claim 46, further comprising:  
means for receiving said packet at said egress router; and  
means for determining whether said packet can be forwarded by said egress router based on said SGI.
48. (Original) The apparatus of claim 47, wherein said means for determining whether said packet can be forwarded further comprises:  
means for determining whether said packet can be forwarded by said egress router based on said SGI, a destination of said packet and an identifier of said tunnel.
49. (Original) The apparatus of claim 47, wherein said means for determining whether said packet can be forwarded further comprises:  
means for generating an index into an access control list (ACL), wherein  
said ACL comprises information regarding whether said packet can be forwarded by said egress router, and  
said index includes said identifier of said tunnel; and  
means for accessing said ACL using said index.